

Ipomoea pes-caprae (CONVOLVULACEAE) on Ninety Mile Beach, New Zealand

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ABSTRACT

The discovery of *Ipomoea pes-caprae* (L.) Sweet on Ninety Mile Beach adds a tropical shore convolvulus to the naturalized flora of the North Island of New Zealand.

In April 1957 Mr H. G. B. Halliwell, Instructor in Agriculture, Kaitaia, sent a specimen of *Ipomoea pes-caprae* (L.) Sweet to the Botany Division, Department of Scientific and Industrial Research, Lincoln. He collected it "three miles above Brent's farm, Hukatere". The specimen (CHR 96074) is infertile, with three somewhat imperfect leaves.

In August 1966 Mr Des Ogle, Forest Ranger, Aupori State Forest, found three plants of *Ipomoea pes-caprae* in a valley in the foredune on Ninety Mile Beach, about two miles north of Hukatere Lookout. The three plants are growing about latitude S 34° 52', longitude E 173° 04'; the reference on sheet N 6 of the N.Z. topographical map series 1:63,360 (1 mile to 1 inch) being 565977. No other plants of this species have been found on Ninety Mile Beach and the three plants found by Mr Ogle seem to be the same occurrence as that reported by Mr Halliwell. More recently, Mr C. F. Brent of Mill Bay, Mangonui, advised that, when he was part owner of 430 acres at Hukatere, he and Mrs Brent found *Ipomoea pes-caprae* there. It was some years before they realised that it was unusual and, in 1957, asked Mr Halliwell to identify it.

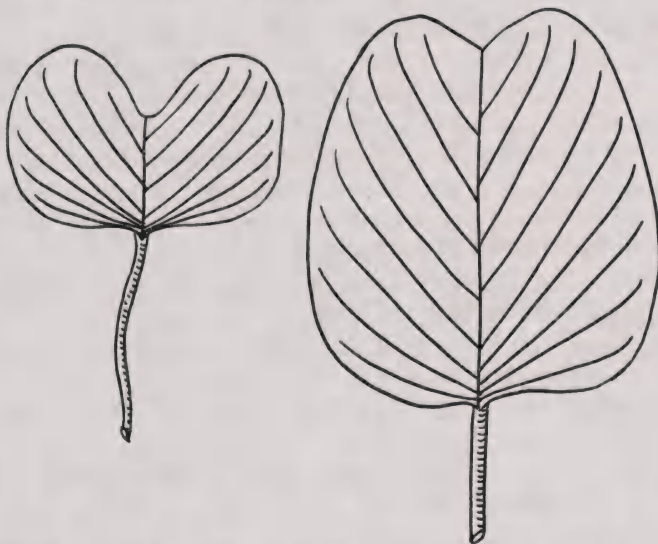


Fig.1.—Leaves of *Ipomoea pes-caprae* (L.) Sweet. Left, ssp. *pes-caprae*. Right, ssp. *brasiliensis* (L.) van Ooststr. (after van Ooststroem). Two-thirds natural size.

Ipomoea pes-caprae belongs to the Convolvulus family, which includes the kumara or sweet potato, *Ipomea batatas* (L.) Lamk., and the bindweeds, species of *Convolvulus* and *Calystegia*. It has been recorded from Norfolk, Lord Howe and Raoul Islands, but it has not been reported previously from the mainland of New Zealand. The Ninety Mile Beach plants may not be the southernmost occurrence of the species; it seems to reach the same latitude in South Africa.

S. J. van Oostroom, in a paper on *The Convolvulaceae of Malaysia III* in *Blumea* 3(3): 533, 1940, distinguished two subspecies:—

ssp. *pes-caprae*, which is restricted to the coasts of continental tropical

Asia, and a few localities on the East African Coast, and

ssp. *brasiliensis* (L.) van Oostr., which is circumtropical in distribution.

Van Oostroom illustrated the leaves of the two subspecies, and his drawings are reproduced (text fig. 1). The plants from Ninety Mile Beach belong to ssp. *brasiliensis*, although they are less luxuriant than those found on the sanddunes of Raoul Island and other warmer shores.

The habitat of the three plants at Ninety Mile Beach is shown in Plate 25, fig. a. Two plants grow above the bend of the creek, on the north face of the dune. The angle of slope is about 45°, and the plants are sheltered from cold southerly and westerly winds. The third plant is growing some 16 m. south of the creek, on a sheltered northerly slope in a hollow in the dunes. The largest plant, on the left in figure a, covers an area about 6 m. x 5 m. The second plant, near the centre of figure a, covers an area about 4 m. x 3 m. The third plant, not shown, spreads over 2 m. x 1 m. of the sand surface. The vegetation about the three plants consists of the following:

Native Species

Spinifex hirsutus Labill. Sand grass covers the foredunes.

Cassinia retorta A. Cunn. Cottonwood or tauhinu, a shrubby member of the Compositae, is frequent on fixed dunes.

Muehlenbeckia complexa (A. Cunn.) Meissn. Pohuehue, a member of the Polygonaceae, forms tangled masses on older dunes.

Leptocarpus simplex A. Rich. Dense tussocks of jointed rush or oioi, a member of the Restionaceae, grow in wet sand at the mouth of the stream, and behind in the dunes.

Arundo conspicua Forst.f. Toetoe, a member of the Gramineae, forms large tussocks near the creek.

Scirpus nodosus Rottb. Tufts of this sedge, a member of the Cyperaceae, are common on the dunes.

Deyeuxia billardieri Kunth. Sand bent, a member of the Gramineae, is also common.

Senecio lautus Willd. Shore groundsel, a small, yellow flowered Composite, is found occasionally.

Oxalis corniculata L. Creeping yellow sorrel, a member of the Oxalidaceae, also occurs occasionally on the dunes.

Phormium tenax J. R. & G. Forst. Native flax grows near the stream.

Ipomoea palmata Forsk. This rare Convolvulus scrambles among *Leptocarpus* and *Phormium* near the stream mouth.

- Cassytha paniculata* R.Br. This parasite, a member of the Lauraceae, also twines through the *Leptocarpus-Phormium* community.
- Lobelia anceps* Linn.f. The shore lobelia is common in wet places.
- Festuca littoralis* Labill. Sand fescue, a member of the Gramineae, forms isolated tussocks about high-water level.
- Carex pumila* Thunb. Dune sedge forms a carpet from the creek to high-water level. The Landrover in Plate 25a is standing on the *Carex*, with a belt of *Leptocarpus* behind.
- Selliera radicans* Cav. This creeping herb, a member of the Goodeniaceae, covers areas of damp sand in the *Carex-Leptocarpus* communities.

Introduced Species

- Ammophila arenaria* (L.) Link. Marram grass has been planted as a sand binder, and is probably spreading naturally.
- Lupinus arboreus* L. Lupin has been planted widely and is common.
- Briza maxima* L. Quaking grass is common on the dunes.
- Bromus catharticus* Vahl. Prairie grass is found occasionally.
- Bromus mollis* L. Soft brome is also present.
- Pholiurus incurvus* (L.) Schinz & Thell. This grass lines the creek.
- Juncus lampocarpus* Ehr. This rush also edges the creek.
- Ornithopus pinnatus* (Mill.) Druce. Serradella, a legume, occurs frequently on the dunes.
- Polycarpon tetraphyllum* L. Allseed, a member of the Caryophyllaceae, forms mats on bare sand of fixed dunes.
- Silene gallica* L. Catchfly, another member of the Caryophyllaceae, is present.
- Erigeron canadensis* L. Canadian fleabane, a Composite, is common.
- Hypochoeris radicata* L. Catsear, another Composite, is also common.

Voucher specimens of the plants listed are preserved in the Museum Herbarium. Scientific names used are those of standard *Floras*; subsequent revisions, which are not widely known, have not been taken into account.

Mr Ogle, who has observed the three plants of *Ipomoea pes-caprae* since August 1966, has noted that they lose their leaves after storms. The resulting bare branches and new growth are shown in Plate 25, fig. b, and in Plate 26, fig. a. The woody rhizome of the largest plant, shown in Plate 26, fig. b, is about 5.5 cm. in diameter. The diameters of the central rhizomes of the second and third plants are 2.5 and 1.5 cm. respectively. Mr Ogle's observations on leaf fall suggest that growth is slow and erratic. The size of the woody rhizomes suggests that the plants have been present for a number of years. It is unlikely that they were planted by man; they are not garden flowers, crop plants, pasture plants or weeds. Possibly they grew from seed that was washed ashore from ocean currents which sweep around the north of New Zealand.

In the winter of 1956, Mr Brent and other farmers of the district noticed a number of tropical seeds and fruits on Ninety Mile Beach, and Miss Ruth Mason, Botany Division, D.S.I.R., Christchurch, listed them in

a paper entitled *Dispersal of Tropical Seeds by Ocean Currents*, published in *Nature*, 191 (4786): 408-9, July 22, 1961.

Mr R. C. Lloyd, District Forester, Kaikohe, found a seed among the plants in September-October 1966. Mr A. N. Sexton, Conservator of Forests, Auckland, also gathered a capsule at that time. Van Ooststroom described the capsule and seed of ssp. *brasiliensis*:—

“capsule globular, c. 12-15 mm. high, glabrous, 4-valved, 2-celled, 4-seeded; valves thick, brown outside, white inside; seeds black, densely brownish tomentose, 6-7 mm. long.”

The capsule found by Mr Sexton is 16 mm. high, 4-valved, 1-celled, 1-seeded. Apparently one cell and three seeds have aborted. The seeds found by Messrs Lloyd and Sexton are both 8 mm. long.

H. N. Ridley, in *The Dispersal of Plants throughout the World*, L. Reeve & Co. Ltd., Kent, 1930, p. 302, mentions that many species of the *Convolvulus* family are widely sea-dispersed, and that buoyancy is often due to an unoccupied space in the testa or outer seed coat. Certainly both seeds from the Ninety Mile Beach plants float and roll like ping-pong balls on the surface of water.

The only flower obtained so far was gathered in January 1967. Van Ooststroom described the flower of ssp. *brasiliensis*:—
“exterior sepals 5-8, interior ones 6-11 mm. long, corolla 3-5 cm. long.”

The measurements of the dried flower, gathered in January, are:—
exterior sepals 10 mm., interior ones 12 mm., corolla 4.5 cm. long.

Clearly, further collections of flowers, fruit and seed, and further observations of the growth of the plants are desirable.

Recently, Mr and Mrs Brent advised that they have seen “at least two other seedlings at Hukatere, probably since destroyed by cattle”, and a hunt for further plants in the dunes about Hukatere might also be worthwhile.

Acknowledgments

I am indebted to Mr A. N. Sexton for bringing this interesting find to the Museum; to Mr R. C. Lloyd for permission to use his excellent photographs; to Mr D. Ogle for invaluable help in the field; and to the Director, Botany Division, D.S.I.R., Lincoln, for supplying information for this note.



(Above)—Stream two miles north of Hukatere Lookout, Ninety Mile Beach. Two plants of *Ipomoea pes-caprae* grow on the dune behind the creek, with *Spinifex hirsutus* and other species. The Landrover is standing on a carpet of *Carex pumila* with a belt of *Leptocarpus simplex* behind.

Photo R. Cooper

(Below)—Bare stems and new growth of *Ipomoea pes-caprae* in the *Spinifex-Leptocarpus* community.

Photo R. Cooper



(Above)—New growth from a woody rhizome of *Ipomoea pes-caprae*, among *Spinifex hirsutus*. Photo R. C. Lloyd

(Below)—The central rhizome of the largest plant of *Ipomoea pes-caprae*, about 5 c.m. in diameter. Photo R. C. Lloyd